UR/0040/65/029/004/0796/0797

37
B

L 3677-66    EWT(l)/EWP(m)/EWA(d)/FCS(k)/EWA(l)

ACCESSION NR: AP5021314

AUTHOR: Shifrin, E. G. (Moscow)

TITLE: On flows of an ideal gas with a sonic surface coinciding with the characteristic one

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 4, 1965, 796-797

TOPIC TAGS: flow characteristic, gas dynamics, sonic line, ideal gas flow, supersonic gas flow, potential flow

ABSTRACT: A study is made of the flow of an ideal gas with a sonic surface corresponding to the characteristic surface. The author denotes this type of flow as A-flow for convenience. It is noted that earlier studies (see O. S. Ryzhov and Yu. D. Shmyglevskiy. Ob odnom svoystve transzvukovykh techeniy gaza, PMM, 1961, t. 25, vyp. 3) show that a general condition for A-flows is that the sonic surface be minimal. The author finds an additional prerequisite condition. The energy theorem is stated in the form

$$\operatorname{div}(\rho v n_1) = \frac{\partial \rho v}{\partial s_1} + \rho v \operatorname{div} n_1 = 0, \qquad \frac{\partial}{\partial s_1} = n_1 \cdot \nabla,$$

where $n_1$ is a unit velocity vector, and the equations of motion are given in the

Card 1/2

Card 2/2

OTHER: 001                SUB CODE: ME

ACC NR: AP6034543

SOURCE CODE: UR/0421/66/000/005/0099/0101

AUTHOR: Shifrin, E. G. (Moscow)

ORG: none

TITLE: Certain properties of symmetrical flow past a profile with a detached shock wave

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 5, 1966, 99-101

TOPIC TAGS: supersonic aerodynamics, adiabatic flow, ideal gas, detached shock wave

ABSTRACT: A certain number of properties of an adiabatic flow of an ideal gas behind a detached shock wave in the case of a supersonic, one-dimensional, symmetric flow past a smooth convex profile are discussed. Five theorems are formulated and demonstrated regarding the displacement of the velocity vector along different sections of the sonic line which contains certain singular points, such as the point where the curvature of the streamline, which is considered as a function of the arc length of the sonic line, changes its sign and others. Orig. art. has: 3 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 01Apr66/ ORIG REF: 003

Card 1/1

ACC NR: AP6033493        SOURCE CODE: UR/0413/66/000/018/0115/0115

INVENTOR: Chashchin-Semenov, K. V.; Grigor'yev, V. G.; Nikolayev, V. M.; Shifrin, E. G.

ORG: none

TITLE: Axisymmetric, shaped nozzle for wind tunnels. Class 42, No. 186167

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 115

TOPIC TAGS: axisymmetric nozzle, wind tunnel, hypersonic wind tunnel, boundary layer suction

ABSTRACT: The proposed axisymmetric, shaped nozzle for wind tunnels with low density flow, such as hypersonic, is made of separate rings with adjustable slots between them for boundary layer suction. In order to simplify the design and to reduce it, the size of the nozzle is made with two female chambers. The chambers are insulated one from another by a movable partition and are connected by channels with the cavity of the working chamber. In addition to this, an ejector is mounted in the channel of the end chamber to increase the boundary layer suction.

SUB CODE: 21,/4/SUBM DATE: 22Aug64
Card 1/1                    UDC: 620.178

SOURCE CODE: UR/0421/66/000/006/0144/0146

ACC NR: AP7001565

AUTHOR: Shifrin, E. G. (Moscow)

ORG: none

TITLE: Plane vortex flow near the point of orthogonality of the sonic line to the velocity vector

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 6, 1966, 144-146

TOPIC TAGS: plane flow, vortex flow, vector, entropy, transonic flow, asymptotic property, nozzle flow, differential equation

ABSTRACT: This paper presents a study of a plane vortex flow in the vicinity of point K of the sonic line at which it is orthogonal to the velocity vector. The gas dynamics equations are taken in a coordinate system whose lines are the lines of flow $\psi = \mathrm{const}$ and their orthogonal trajectories $\varphi = \mathrm{const}$:

$$(M^2 - 1) \frac{\partial \ln \lambda}{\partial s_1} = \frac{\partial \beta}{\partial s_2}, \quad \frac{\partial \beta}{\partial s_1} = \frac{\partial \ln \lambda}{\partial s_2} + \frac{1}{kRM^2} \frac{dS}{ds_2}, \quad \frac{\partial}{\partial s_1} = \frac{\partial}{h_1 \partial \varphi}, \quad \frac{\partial}{\partial s_2} = \frac{\partial}{h_2 \partial \psi},$$

Here $\lambda$ is the velocity coefficient; $\beta$ the slope of the velocity vector to some fixed direction read counter clockwise; M the Mach number; S the entropy; k the adiabatic index; R the gas constant; and $h_1$, $h_2$ Lamé coefficients. The solution, which describes the flow in the vicinity of point K, has the form

Card 1/2

ACC NR: AP7001585

$$u = A\varphi - \tfrac{1}{2}(A^2 - \omega)\psi^2, \quad v = \Omega\varphi + A^2\varphi\psi - \tfrac{1}{6}A(A^2 - \omega)\psi^3$$
$$\Omega = (k+1)W_0 = \frac{k+1}{kR}\frac{dS}{d\psi}, \quad A = -(k+1)\frac{\partial\lambda}{\partial s_1} \quad \text{at point K.}$$

Analysis of the results makes it possible to establish a qualitative picture of the distribution of the characteristics in plane $\varphi\,\psi$ for various values of $r = 9-8\,\omega/A^2$ (see Fig. 1).
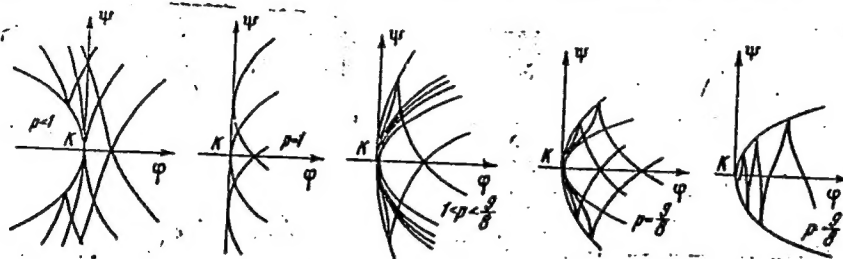


Fig. 1.

The distribution of the characteristics is similar to that of the characteristic surfaces of a three-dimensional potential flow in the vicinity of a "nozzle center." Orig. art. has: 8 formulas and 3 diagrams.

SUB CODE: 20/ SUBM DATE: 20May66/ ORIG REF: 004

Card 2/2

L 29800-66    EWT(1)/EWP(m)

ACC NR:  AP6013198                SOURCE CODE:   UR/0421/66/000/002/0060/0066

44
43
B

AUTHOR:  Shifrin, E. G. (Moscow)

ORG:  none

TITLE:  Flow around a thin wedge in an aerodynamic tube with partially perforated walls at high subsonic velocities

SOURCE:  AN SSSR.  Izvestiya.  Mekhanika zhidkosti i gaza, no. 2, 1966, 60-66

TOPIC TAGS:  aerodynamic theory, gas flow, motion equation, hodograph

ABSTRACT:  It is assumed that the walls of the flat aerodynamic tube are parallel, that the wedge is thin, that the specific flow rate through the perforated section of the wall is small, and that the flow differs only slightly from straight line sonic flow.  (See Fig. 1)
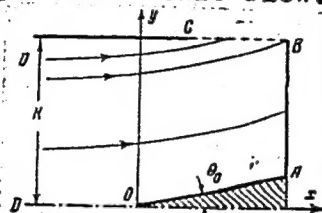


Figure 1

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L 29860-66

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ACC NR: AP6013198

In this case, the equation of motion can be written in the form

$$uu_x - v_y = 0, \quad u_y + v_x = 0, \quad u = 1 - M^2, \quad v \approx (x+1)\,\theta \qquad (1)$$

Here $\theta$ is the angle of inclination of the velocity vector to the axis of symmetry; kappa is a subscript indicating an adiabatic curve. In the plane of a hodograph system (1) will have the form

$$uy_v - x_u = 0, \quad x_v + y_u = 0 \qquad (2)$$

and reduces to the Tricomi equation

$$y_{rr} + y_{vv} + \frac{1}{3r}\,y_r = 0 \qquad (3)$$

The article proceeds to solution of Equation (3). It is claimed that solution of this model problem can be used to determine the optimum parameters of a suction system; at these parameters the aerodynamic characteristics in the tube will be the closest to the aerodynamic characteristics in an infinite flow. "In conclusion the author thanks Ye. M. Kalinin for reviewing the work." Orig. art. has: 19 formulas and 6 figures.

SUB CODE: 20/ SUBM DATE: 23Jul65/ ORIG REF: 002/ OTH REF: 003

Card 2/2 FV

PETRUSHOV, A., doktor ekonom.nauk; AFANAS'YEV, L.A., kand.ekonom.nauk; DANILEVICH, M.V., kand.ekonom.nauk; YEGIAZAROVA, N.A., kand.ekonom. nauk; KOVALEV, Ye.V.; KOL', M.A.; KUZNETSOV, B.P., kand.ekonom. nauk; KUTSOBINA, N.K.; MARTYNOV, V.A., kand.ekonom.nauk; MEN'SHI- KOVA, M.A.; NIKITENKO, B.A.; ONUFRIYEV, Yu.G.; PROKHOROVA, G.N.; RYDVANOV, N.F.; SEGAL', N.M., kand.istor.nauk; UKHOVA, A.M.; FARIZOV, I.O., kand.istor.nauk; SHIFRIN, E.L., doktor ekonom.nauk; SHLIKHTER, A.A., kand.ekonom.nauk; LISOVSKIY, Yu.P.; MARTYNOV, V.D.; GARSIA, L., red.; MOSKVINA, R., tekhn.red.

[Agriculture of capitalist countries; a statistical manual] Sel'skoe khoziaistvo kapitalisticheskikh stran; statisticheskii spravochnik. Otvet.red.A.Petrushov. Moskva, Izd-vo sotsial'no-ekon.lit-ry, 1959. 829 p.                                                        (MIRA 13:6)

1. Akademiya nauk SSSR. Institut mirovoy ekonomiki i mezhdunarodnykh otnosheniy.
        (Agriculture--Statistics)

C A

3

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Color of organic compounds. E. S. Shifrin. Compt. rend. acad. sci. U. R. S. S. 20, 27 (1938) (in English). The color of org. compds. is discussed critically relative to the theory and method developed by Sklar (C. A. 31, 7788) on the basis of quantum mechanics and semi-empirical data. Sklar's method was corroborated qualitatively by the basic data of chemistry and spectroscopy. An attempt is made to extend this theory beyond hydrocarbons to the calcn. of the color of a few simple heterocyclic compds. The agreement between the calcd. and observed bands is fair for some compds. Joseph Kaye

Arkhangelsk State Pedagogical Inst.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

SHIFRIN, F. S.

"Review of Academician Ya. I. Frenkel's Book, 'The Theory of the Liquid Phase,'" Nauka i Zhizn', No. 6, 1949.

CA

Dependence of the color of highly dispersed colloids on their dispersity. P. Bh. Shibin (Leningrad Pedagog. Inst.). *Kolloid. Zhur.* 13, 311-16(1951).—The main absorption band of polycyclic hydrocarbons moves to greater wave lengths, λ, when the no. of rings increases; since a graphite crystal contains several hundred rings the absorption spectrum presumably consists of several bands in the visible spectrum, and graphite is black. The bridge in naphthalene shortens λ from 6850 in cyclodecapentaene to 2750 A. An analogous effect causes metals to be less dark than graphite. The color of colloidal particles depends on their size in the same manner as the color of a hydrocarbon depends on the no. of π bonds in them.  J. J. Bikerman

SHIFRIN, F. SH.

USSR (600)

Chemistry, Physical and Theoretical

Popular science pamphlets on physical chemistry. Priroda 41,no. 1, 1952

9. Monthly List of Russian Accessions, Library of Congress, _____May_____ 195$. Unclassified.
2

A connection between the electron term energy and the interatomic distances in molecules. (F. Sh. Shifrin. *Soviet Phys. "Doklady"* 1, 32-6 (1956). (English translation). — See C. A. 50 15316c

SHIFRIN, F. Sh.

/Characteristic electron spectra of molecular adsorption (theory of chromophores). F. Sh. Shifrin. J. Anal. Chem. U.S.S.R. 11, 20-58(1956)(Engl. translation).—See C.A. 50, 9135d.                                        B. M. R.

SHIFRIN, F.Sh.

Specificity of electron absorption spectra of molecules;    to the
theory of chromophores.  Zhur.anal.khim. 11 no.1:33-43 Ja-F '56.
(MLRA 9:5)

1. Leningradskiy gosudarstvennyy pedagogigcheskiy institut imeni
A.I. Gertsena.
(Chromophores--Spectra)

USSR/Atomic and Molecular Physics - Physics of the Molecule, D-2

Abst Journal:  Referat Zhur - Fizika, No 12, 1956, 34287

Author:  Shifrin, F. Sh.

Institution:  Leningrad State Pedagogical Institute

Title:  Connection Between Electron Levels of the Energy and Interatomic Distances
        in Molecules

Original Periodical:  Dokl. AN SSSR, 1956, 106, 2, 233-236

Abstract:  It is shown that for diatomic molecules consisting of atoms of the same
group of the periodic system, in particular when the atoms are identical, the
electron terms are approximately inversely proportional to the coupling lengths
$T_{kl}$ = const.  An analogous rule holds also for the ionization potentials.  The
physical meaning of this rule is explained.

- 1 -

SHIFRIN, F.SH.

USSR/Physical Chemistry - Molecule. Chemical Bond, B-4

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60727

Author: Shifrin, F. Sh.

Institution: None

Title: Relationship Between Electronic Energy Levels and Interatomic Distances in Molecules

Original Periodical: Dokl. AN SSSR, 1956, 106, No2, 233-236

Abstract: It is shown that for 2-atomic molecules consisting of atoms of the same group of periodic system, especially when the atoms are the same, electronic terms are about inversely proportional to lengths of bonds: $T_k l$ = const. An analogous rule holds also for ionization potentials. Physical meaning of this rule can be represented approximately as follows: if potential energy of electron in field of 2-atomic residues equals $U = c_0/e - c_1/r_1 - c_2/r_2$ wherein constants $c_0$, $c_1$ and $c_2$ also take into account the degree of shielding of charges of nuclei by electrons of atomic shells, the proposed

Card 1/2

Shifrin F. Sh.

4

539.132

4588   A METHOD OF STUDYING THE ELECTRONIC TERMS OF
21 DIATOMIC MOLECULES. THE ELECTRONIC TERMS AND
LENGTHS OF MOLECULES OF THE ALKALI METALS AND THEIR
HYDRIDES. F Sh Shifrin

Dokl. Akad. Nauk SSSR, Vol. 110, No. 4, 549-51 (1956). In Russian.

It is suggested that for diatomic molecules of the alkali metals
with themselves, with each other and their hydrides, the product of
corresponding excited state electronic term values, $T_e$, and inter-
nuclear distance, l, is constant. This rule enables "corresponding"
term values to be picked out and unknown term values approxi-
mately evaluated. Ten such $T_e$ l products are chosen and the known
energy levels assigned for the 20 compounds with fair agreement,
except for $Li_2$.                                    D.H. Whiffen

Leningrad State Pedagogical Inst. im A.I. Gertsen.

47-6-5/37

AUTHOR:    Shifrin, F. Sh., (Leningrad)

TITLE:     Some Questions on the Structure of Crystals and Molecules in the Physics Course (Nekotoryye voprosy stroyeniya kristallov i molekul v kurse fiziki)

PERIODICAL:   Fizika v Shkole, 1957, # 6, pp 24 - 28 (USSR)

ABSTRACT:      The author points out that the structure of solids is more and more becoming a substantial part of physics instruction. However, experience has shown that some delusions exist among the students as to the structure of solids and molecules. This causes substantial deficiencies in any exposition of these questions during the lessons.
    The author describes the models of the standard crystal lattice- a valuable aid which is often the source of delusion. He tells how the false impressions are caused and refers to a number of textbooks, the pictures in which create false impressions. The author corrects these impressions and describes the structure, size, distance and movement of molecules, crystals and atoms. He deals with the four types of bonds between the particles in crystals and molecules (the covalence, metal, ionic and van der Waals bonds). He also refers to the radius of atoms and ions in crystals and molecules, and more extensive-

Card 1/2

47-6-5/37

Some Questions on the Structure of Crystals and Molecules in the Physics Course

ly deals with the mutual overlapping, the contact and the prin-
ciple of dense packing of particles. The latter concepts are
successfully developed by Soviet scientists, especially by N.V.
Belov and A.I. Kitaygorodskiy.
    There is one Russian reference.

ASSOCIATION:  Pedagogical Institute imeni A.I. Gertsen, Leningrad (Pedagogi-
              cheskiy institut imeni A.I. Gertsena, Leningrad)
AVAILABLE:    Library of Congress

Card 2/2

MARGOLINA, G.M.; SHIFRIN, F.Sh., dotsent, nauchnyy rukovoditel' raboty

A. Einstein's ideas about the teaching of physics. Uch. zap. Ped.
inst. Gerts. 239:69-75 '64.                          (MIRA 18:3)

ACC NR: AR7000839       SOURCE CODE: UR/0058/66/000/009/D011/D011

AUTHOR: Shifrin, F. Sh.

TITLE: Computation of the chromaticity of organic compounds

SOURCE: Ref. zh. Fizika, Abs. 9D72

REF SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. A. I. Gertsena, v. 265, 1965, 373-375

TOPIC TAGS: chromaticity, organic compound, excitation threshold, conjugate bonds, polyene

ABSTRACT: A study was made of various modifications of the method of valent pairs in its application to the computation of the excitation thresholds (T) of organic compounds with conjugate bonds. In the simplest variant, excited structures are not taken into account and the dependence of $T = E_2 - E_1$ on the number of $\pi$-bonds is expressed by the simple formula $P = 6an/2^n$ (a is an exchange integral). A quadratic equation is obtained by ignoring structures containing more than one long bond and by accounting for all structures of the same weight by the use of one coefficient. Its solution makes it possible to determine once again P as a function

Card 1/2

ACC NR: AR7000839

of n. This version may be applied to polyene chains. A general formula is also obtained for the dependence of P on n which is applicable to polyenes and rings. M. Kovner. [Translation of abstract] [SP]

SUB CODE: 20/

Card 2/2

AUTHORS: Shifrin, G. and Trunova, L.

TITLE: The Quality of Type 10 V Viscose Tyre Cord  (O kachestve viskoznogo korda marki 10 V)

ABSTRACT: The main difficulties with type 10 V viscose tyre cord is linear shrinkage and bagging of the cord fabric.  Shrinkage occurs when the cord is impregnated with aqueous material and it is supposed that this can be compensated by stretching the yarns while they are impregnated and dried. Table 1 shows the percentage shrinkage on impregnation and drying, and the total shrinkage of the reeled-up impregnated cord.  Table 2 shows the relative shrinkage on impregnation and drying when there is a differential speed between the second and third sections of the drying chamber. The shrinkage is actually made worse when the cord is tensioned by increasing the speed $V_3$ of the third stage

Card 1/2

SOV/138-59-3-13/16

The Quality of Type 10 V Viscose Tyre Cord

relatively to that of the second stage $V_2$. Attempts to
tension the cord in the drying chamber by creating a
differential speed or friction of 1:1.015 between the
top and bottom calendering rolls similarly gave negative
results, and the overall shrinkage remained at the 5%
level of untensioned fabric. The strength and elongation
at break were similar for tensioned and untensioned cord.
The authors conclude that attempts to tension viscose
tyre cord during impregnation and drying serve no useful
purpose. The width of the cord fabric decreases foll-
owing tension of the cord itself as well as relaxation
of the covering mixes while it is rubberised in the cal-
ender, and attempts are made to overcome this by tentering
the fabric. When the raw fabric is bagged or has unequal
lateral tension, these tentering devices are only part-
ially effective, and the fabric may be creased or split
as it passes through the calender. As the authors give no
solution to either problem, the editors appeal to readers
for further information on this subject.
There are 3 tables.

ASSOCIATION: Voronezhskiy shinnyy zavod  (Voronezh Tyre Factory)

Card 2/2

SHIFRIN, G.A.

Blood transfusion performed on outpatients in a district hospital.
Probl. gemat. i perel. krovi 9 no.11:49 N '64.          (MIRA 18:4)

1. Izyumskaya rayonnaya bol'nitsa (glavnyy vrach B.P.Voloshin).

SHIFRIN, Grigoriy Mordukhovich; SVETLOV, A.I., red.; POPOV, V.N.,
tekhn. red.

[Be better]Byt' luchshim.  Tambov, Tambovskoe knizhnoe izd-
vo, 1961.  15 p.                              (MIRA 16:3)
    (Tambov Province—Railroads—Employees)

SHIFRIN, G. S.

Organizatsiia material'nogo khoziaistva i povyshenie rentabel'nosti.
Moskva, Gosfinizdat, 1948.  46 p. illus.

Refers to "Kalibr" plant in Moscow.

Organizing inventory and increasing profit.

DLC:  HD9999.S43R95

SO:  Manufacturing and Mechanical Engineering in the Soviet Union, Library
of Congress, 1953.

USSR/Metals - Cast Irons, Manufacture Nov 51

"Production of High-Quality Inoculated Gray Iron in Cupola Furnace," I. I. Khoroshev, Cand Tech Sci, G. Ye. Shifrin, Engr, Rostov Inst Agr Mach Bldg, "Krasnyy Aksay" Plant

"Litey Proizvod" No 11, pp 24-26

Investigates optimum addns of ferrosilicon for castings of 30-, 60-, 90-, and 120-mm diams, effect of pouring temp and amt of inoculant on microstructure and mech properties of cast iron, and influences of inoculation on mech properties,

198T83

USSR/Metals - Cast Irons, Manufacture Nov 51 (Contd)

shrinkage and quasi-isotropism of cast iron at considerable deviations from normal chem compn, in particular, with increased contents of S, Mn and C.

198T83

SHIFRIN, G. YE.

SHIFRIN, G.Ye., dotsent; PODKATILOV, K.Ye., inzh.; DUDNIKOV, I.A., inzh.

Using perlite wrought iron in agricultural machines. Trakt. i
sel'khozmash. 33 no.5:42-43 My '63. (MIRA 16:10)

1. Rostovskiy institut sel'skokhozyaystvennogo mashinostroyeniya
(for Shifrin). 2. Gosudarstvennoye spetsial'noye konstruktorskoye.
byuro po sel'skokhozyaystvennym i vinogradnikovym mashinam (for
Podkotilov). 3. Zavod "Krasnyy Aksay" (for Dudnikov).

OSTRIKOV, M.S.; SHIFRIN, G.Ye.; KORYUSHENKO, A.I.; NISAYEVA, Ye.D.

Causes of the coagulation of prime coat No. 138 in dipping tanks.
Sel'khozmashina no.5:29-30 My '56.                    (MIRA 9:8)

1. Kafedra fizicheskoy i kolloidnoy khimii Rostovskogo gosudarstven-
nogo universiteta imeni V.M. Molotova i TSentral'naya laboratoriya
zavoda "Krasnyy Aksay".

(Paint)

SHIFRIN, G.Ye., kand. tekhn. nauk; KARMANOVA, Z.M., inzh.

Corrosion-resistance of pearlitic-ferritic malleable cast
iron. Lit. proizv. no.1:46-47  Ja '66.          (MIRA 19:1)

FEDOTOV, M.; SHIFRIN, I.

Concepts of distribution and redistribution of national income.
Fin. SSSR 18 no.12:40-47 D '57.                    (MIRA 11:1)
                    (Income)

VERGUN, S.; SHIFRIN, I.

Planning and use of working capital. Den.i kred. 17 no.2:50-54
F '59.                                                    (MIRA 12:5)
                    (Lvov Economic Region--Finance)

VERGUN, S.; SHIFRIN, I.

Establishing working capital norms in industrial enterprises.
Den.i kred. 18 no.1:43-46 Ja '60.                (MIRA 13:1)
            (Finance)

BOBIN, P.; SHIFRIN, I., prepodavatel'

Working out norms must begin at enterprises. Fin. SSSR 21 no.3:28-33
Mr '60.                                        (MIRA 13:3)

1.Starshiy kontroler-revizor Kontrol'no-revizionnogo upravleniya po
L'vovskoy oblasti (for Bobin).  2.L'vovskiy lesotekhnicheskiy institut
(for Shifrin).
                  (Lvov Province-- Industries)

SHIFRIN, I.

How a firm should be organized.  Sots.trud 8 no.4:75-78 Ap
'63.                                                      (MIRA 16:4)
                    (Lvov—Shoe industry—Management)
                        (Industrial organization)

OSOKIN, A.; KUPCHENKO, L.; MUSATOV, N.; SHIFRIN, I.

New developments in leather finishing. Kozh.-obuv.prom. 2
no.10:29-31 O '60. (MIRA 13:11)
(Leather) (Finishes and finishing)

SHTERN, A.A., inzh.; SHIFRIN, I.A., starshiy inzh.

For a further specialization in shoe manufacture. Kozh.prom. 3
no.1:11-12 Ja '61.                                    (MIRA 14:5)
                        (Shoe manufacture)

SHTERN, A.A.; SHIFRIN, I.A., inzh.

The first Soviet consolidated enterprise. Kozh.-obuv.prom. 4 no.2:11-14 F '62. (MIRA 15:4)

1. Glavnyy inzhener firmy "Progress".
(Shoe industry)

SHIFRIN, I. A

Šifrin, I. A.  On a variational problem.  Učenye Zapiski
Kazan. Univ. 101, kn. 3, (3–18 (1941).  (Russian)
The problem is to minimize

$$I(s) = \int_a^b F(x, s_1, \cdots, s_m, s_1', \cdots, s_m')dx$$

in a class of functions $s$ which satisfy certain end conditions
and also give assigned value at $b$ to the solution $y$ of the
equation (*) $d^n y/dx^n = G(x, s_1, \cdots, s_m, s_1', \cdots, s_m')$, the
values of $y, \cdots, y^{(n-1)}$ at $a$ being also assigned. The La-
grange multiplier rule is obtained. The author overlooks
the fact that the equation (*) and the end-conditions on
$y, \cdots, y^{(n-1)}$ are equivalent to isoperimetric conditions,
with integrands of the form $(b-x)^i G(x, s_1, \cdots, s_m')$.
                              E. J. McShane (Charlottesville, Va.).

Source:  Mathematical Reviews,          Vol  10  No. 6

SHIFRIN, I-A

Šifrin, L. A. On the extrema of compound functionals.
Učenye Zapiski Kazan. Univ. 101, kn. 3, 19–21 (1941).
(Russian)

Let $J_0, \cdots, J_n$ be functionals on the Banach space $C^2$, and let $\varphi_i$ be real-valued functions on $(n+1)$-space $(i=0, \cdots, k < n)$. A minimum for $\varphi_0(J_0, \cdots, J_n)$ is sought subject to side-conditions $\varphi_i(J_0, \cdots, J_n)=0$ $(i=1, \cdots, k)$. It is indicated that the problem is related to an isoperimetric problem.          E. J. McShane (Charlottesville, Va.).

Source: Mathematical Reviews,          Vol 10 No. 6

 SHIF IN, I. A.

Dissertation: "Etiology of the So-Called Termez Fever."  Cand Med Sci, Tashkent
Medical Inst, 9 Jun 54.  Pravda Vostoka, Tashkent, 29 May 54.

SO:  SUM 244, 26 Nov 1954

SHIFRIN, I. A.

USSR/Medicine - Q-Fever

FD 153

Card 1/1

Author      :   Chumakov, M. P.; Belyayeva, A. P.; Shifrin, I. A.; Khodukin, N. I.;
                and Lysunkina, V. A.

Title       :   The study of Q-fever in the USSR. I. Data on the Identification of
                Q-fever infections.

Periodical  :   Zhur. mikrobiol. epid. i immun. 5, 40-48, May 1954

Abstract    :   By preparing a highly active specific antigen of R. burnetti and using
                it to carry out complement fixation and agglutination reactions, Q-fever
                was detected in a number of oblasts in the USSR.  Q-fever was also identi-
                fied etiologically by isolating strains of R. burnetti from the blood
                of persons suffering from a typical fever, and from the ticks, Hyalomma
                anatolicum.  The investigations are illustrated by 4 charts, a graph and
                a microphotograph.  Many other persons working on Q-fever are mentioned,
                but no references are cited.

Institution :

Submitted   :   July 21, 1953.  Presented at a scientific conference of the Institute
                of Virology of the Academy of Medical Sciences USSR, December 1, 1952.

Comment  W-30830, 11 Aug 54

FD-1622

USSR/Medicine - Q-Fever

Card 1/1            :  Pub. 148-2/28

Author       :  Shifrin, I. A.

Title        :  Q-fever in Tadzhikistan and Kazakhstan

Periodical   :  Zhur. mikro. epid. i immun. 7, 8-11, Jul 1954

Abstract     :  It has been established that "Termezskiy fever" is actually Q-fever,
                and, henceforth, the latter name will be employed.  Typical cases of
                Q-fever in Tadzhikistan, Kazakhstan, Uzbekistan, and Turkmenia are
                described.  The case histories of patients in Tadzhikistan are given.
                Agglutination reactions have shown that the five strains of Rickett-
                siae isolated in these cases are identical with the Termez strain and
                R. Burneti.  The results of immunity and agglutination tests are pre-
                sented on two charts.  No references are cited.

Institution  :  --

Submitted    :  October 29, 1953

SHIFRIN, I. A.
USSR/Medicine - Q-Fever

FD-2606

Card 1/1          Pub. 148 - 17/25

Author      : Shifrin, I. A. and Nabatov, P. I.

Title       : The problem of the role of cattle, sheep, and goats as a source
              of infection in Q-fever

Periodical  : Zhur. mikro. epid. i immun. 4, 76-77, Apr 1955

Abstract    : The infectivity of cattle sheep and goats and their role in
              spreading Q-fever in Central Asia was examined.  Agglutination
              and complement fixation reactions established that sheep and
              goats were the primary source of infection with Q-fever in the
              area.  Positive reactions were obtained on 24% of the sheep
              serum, 27.1% of the goat serum, and only 1.8% of the cattle
              serum.  The results of the serological investigation are pre-
              sented on a chart.  No references are cited.

Institution : The Virus Laboratory (Chief - I. A. Shifrin)

Submitted   : December 18, 1954

SHIFRIN, I.A., podpolkovnik med.sluzhby., KURGUZOV, S.S., podpolkovnik med. sluzhby.

Detecting dysentery carriers. Voen.med.zhur. no.12:79 D '55

(MIRA 12:1)

(DYSENTERY)

57.  Epidemiology of Q Fever Studied

"Some Data on the Epidemiology of Q Fever," by Lt Col Med Serv
V. D. Belyakov, Candidate of Medical Sciences, and Lt Col  Med
Serv I. A. Shifrin, Candidate of  Medical  Sciences,  Voyenno-
Meditsinskiy Zhurnal, No 4, Apr 57, pp 34-38

The report covers studies made in "three different locations" in Central Asia on the causes and transmission of Q fever.  The role played by ticks and domestic animals in the transmission was investigated.

It was determined that the pathogen was transmitted in the dust stirred up by sheep and goats and inhaled by the people who were in close contact with them or who used the same dusty roads over which the herds were driven to pasture, and that the resulting infections often reached epidemic proportions.  Only isolated cases of Q fever could be traced to tick bites.

Where people are exposed to close contact with domestic animals, especially sheep and goats, inoculation is necessary.  (U)

Sum 1459

SHIFRIN, I.A.; ROZHKOV, F.V.; THUBA, I.V.

Vaccination of sheep against Q fever. Zhur. mikrobiol. epid. i immun. 29
no.8:97-101 Ag '58.
                  (Q FEVER, prev. & control.                    (MIRA 11:10)
                        vacc. of sheep (Rus))
            (SHEEP, dis.
                  Q fever, vacc. (Rus))

SHIFRIN, I.A.; NABATOV, P.I.

Serum diagnosis of Q fever using an antigen from a local
strain of Rickettsia burneti. Zhur.mikrobiol.epid. i immun.
30  no.5:142  My '59.                    (MIRA 12:9)
                    (Q FEVER)

SHIFRIN, I.A.; SHUTYAYEV, N.A.; LAVRINENKO, S.P.; SHIRONIN, L.I.

Outbreak of Pomona type anicteric leptospirosis preceded by
Q-fever.  Med. zhur. Uzb.  no.5:76-78 My '60.      (MIRA 15:3)
            (UZBEKISTAN—LEPTOSPIROSIS)
                (Q FEVER)

SHIFRIN, I.A.; ABRAMOV, B.S.; METSKAN, T.I.

Outbreak of anicteric leptospirosis in the Termez District.  Med. zhur.
Uzb. no.6:52-53 Je '60.                                    (MIRA 15:2)
                   (TERMEZ DISTRICT—LEPTOSPIROSIS)

SHIFRIN, I.A.

Some problems in the epidemiology of Q fever in the southern part
of Central Asia.  Med. zhur. Uzb. no.3:28-32 Mr '61.  (MIRA 14:5)
(SOVIET CENTRAL ASIA—Q FEVER)

SHIFRIN, I.A.; FABRIKANTOV, G.A.; LAVRINENKO, S.P.

Spreading of leptospirosis infection (Pomona type) through reservoir
water. Med. zhur. Uzb. no.2:43-45 F '62. (MIRA 15:4)
(LEPTOSPIROSIS) (WATER—POLLUTION)

SHIFRIN, I.A., kand. med. nauk

Apropos the article "Agglutinability of the water Leptospira
strain by human serum" by I.I. Ashmarin, I.K. Musabaev.
Reviewed by I.A. Shifrin. Med. zhur. Uzb. no.7:78-79 Jl '63.
(MIRA 17:2)

LISOVICH, Yu.Yu.; RACHKOV, V.I.; RADOMYSEL'SKIY, M.I.; SHIFRIN, I.A.

Concentration and specialization of the production of wooden
containers. Der. prom. 14 no.6:16  Je '65.          (MIRA 18:7)

NIFRM, I. F.

Normirovanie stroitel'nykh rabot v ugol'noi promyshlennosti /Standardization of construction work in the coal industry./ Moskva, Ugletekhizdat, 1954.  180 p.

SO:  Monthly List of Russian Accessions, Vol. 6 No. 5, August 1953

TSUKERMAN, R.V., kand. tekhn. nauk; BULANOV, N.G., kand. ekon. nauk;
SHIFRIN, I.B., inzh.; BRIL', A.R., inzh.; NAZARENKO, S.S.,
inzh.; BIZINA, N.S., inzh.

Auxiliary equipment of steam turbine electric power plants.
Energomashinostroenie 11 no.9:40-42 S '65.    (MIRA 18:10)

LEVENKO, P.I.; SHIFRIN, I.G.

    Increasing the wear resistance of leather for shoe uppers. Kozh.-
obuv.prom. 4 no.12:13-16 D '62.        (MIRA 16:1)
                              (Leather)

LEVENKO, Petr Ivanovich; SHIFRIN, I.G., retsenzent; GRACHEVA, A.V.,
      red.; BATYREVA, G.G., tekhn. red.

      [Experimental use of "Zhiramol" in leather fat-liquoring]
      Opyt primeneniia zhiramola pri zhirovanii kozh.  Moskva,
      Gislegprom, 1963.  42 p.                    (MIRA 16:9)
            (Leather)   (Oils and fats)

STRAKHOV, I.P., doktor tekhn. nauk, prof.; LEVENKO, P.I., kand. tekhn. nauk; SHIFRIN, I.G., inzh.

Effect of radiation on leathers tanned by various methods.
Izv. vys. ucheb. zav.; tekh. leg. prom. no.2:93-99 '63.
(MIRA 16:10)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti
(for Strakhov). 2. Moskovskiy gorodskoy sovet narodnogo
khozyaystva (for Levenko, Shifrin).

STRAKHOV, I.P.,doktor tekhn. nauk, prof.; LEVENKO, P.I., kand. tekhn. nauk;
SHIFRIN, I.G., inzh.

Effect of small doses of gamma radiation on some physicomechanical
properties of chrome-tanned leather. Kozh.-obuv. prom. 5
no.11:24-28 N '63.                                    (MIRA 17:1)

SHAPIRO, A. Ye., kand. tekhn. nauk; SHIFRIN, I. G., inzh.; KOVTUNOVICH,
S. D., starshiy nauchn. sotrudnik

"New technological processes in leather manufacture" by P. I.
Levenko, M. A. Khelemskii. Reviewed by A. E. Shapiro, I. G.
Shifrin, S. D. Kovtunovich  Kozh. obuv. prom. 5  no. 12:31-33
D '63.                                      (MIRA 17:5)

1.  Ukrainskiy nauchno-issledovatel'skiy institut kozhevenno-
obuvnoy promyshlennosti (for Kovtunovich).

STRAKHOV, I.P., doktor tekhn. nauk, prof.; SHIFRIN, I.G., inzh.

Effect of ionizing radiation on proteins and finished leather.
Nauch. trudy MTILP no.30:34-47 '64.

Effect of ionizing radiation on the improvement of the wear
properties of leather. Ibid.:48-55

(MIRA 18:6)

1. Kafedra kozhi i mekha Moskovskogo tekhnologicheskogo
instituta legkoy promyshlennosti.

LEVENKO, P.I.; SHIFRIN, I.G.

Increasing waterproofness and wear resistance  of leather for
shoe uppers.  Kozh.-obuv. prom. 6 no.5:29  My '64.    (MIRA 17:12)

BASHARIN, A.A.; KUPCHENKO, L.D.; SHIFRIN, I.G.

Substituting synthetic products for foodstuff is an urgent problem.
Kozh.- obuv. prom. 6 no.5:12-13  My '64.                    (MIRA 17:12)

Shifrin, I. I.

USSR/Mining Methods          Mar 49
      Iron

"System of Mining at Kapital'nyy Mine, Bogoslav-
skiy Ore Administration," I. I. Shifrin, Mining
Engr, 4 pp

"Gor Zhur"  No 3

Describes system of working magnetic iron ores
at subject mine, with five sketches.


FDB                              43/49784

127-10-4/24

SHIFRIN, I. I.

SUBJECT:     USSR/Mining

AUTHORS:     Shifrin, I. I. and Fesenko, V. D., Mining Engineers

TITLE:       Construction of the Dashkesan Open Mine (Stroitel'stvo Dashkesanskogo kar'yera)

PERIODICAL:  Gornyy Zhurnal, 1957, #10, pp 17-22 (USSR)

ABSTRACT:    The Dashkesan iron ore deposit in the Azerbaydzhan SSR is located in a mountainous region, 1,600 to 1,800 m above sea level.  The deposit consists of two sections (north-eastern and north-western) separated by the canyon of the Kashkar-Chay River.  It is a deposit of the skarn-magnetite type with a 10 to 12° angle of dip.  The thickness of the ore body varies from 3 to 35 m.  The thickness of the covering rocks varies from zero to 90 m in the north-western section and up to 135 m in the north-eastern section.  The average iron content in the ores of the north-eastern section is 45% and in the north-western section 37 %.  The ratio of resources of these sections is 1 to 3.

It was planned to mine the north-eastern section by underground methods.  The practice has shown that strip-mining is more expedient.  The height of the benches is 10 m.  Rocks and ores

Card 1/3

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Construction of the Dashkesan Open Mine (Stroitel'stvo            127-10-4/24
Dashkesanskogo kar'yera)

are loaded into excavators and transported to a con-
centration plant by dump trucks.  The planned annual capacity
of the north-eastern section is 800,000 tons of ore.  The actual
output in 1956 was 854,000 tons.

The north-western section is exploited by strip-mining.  The
construction of the open pit was begun at the end of 1954 and
the first ore was delivered to the concentration plant early
in 1955.  The planned capacity of the northwestern section is
1,600,000 tons per year; its actual output in 1956 was 535,000
tons.

The concentration plant was built originally to operate on the
dry magnetic separation method.  Due to imperfections in the
technological process, it was decided to reconstruct the plant
and to apply the wet magnetic separation method to obtain
an agglomeration concentrate with 60 % iron content.  The pre-
sent concentrate has only an iron content of 53.5 %.  The pro-
jected capacity of the plant after reconstruction is 1,312,000
tons of concentrate per year.  The actual output in 1956 was
956,000 tons.

Card 2/3

VINOGRADOV, V.S., inzh.; AL'TSHULER, M.A., kand. tekhn. nauk; POLYAKOV,
    V.G., inzh.; KUROCHKIN, A.N., inzh.; KARMAZIN, V.I., doktor tekhn.
    nauk; ZAIKIN, S.A., inzh.; OSTROVSKIY, G.P., inzh.[deceased];
    NAUMENKO, P.I., inzh.; BOBRUSHKIN, L.G., inzh.; RUSTAMOV, I.I.,
    inzh.; SHIFRIN, I.I., inzh.; GOLOVANOV, G.A., inzh.; KRASOVSKIY,
    L.A., inzh.; TSIMBALENKO, L.N., inzh.; RAVIKOVICH, I.M., inzh.;
    BAZILEVICH, S.V., kand. tekhn.nauk; ZORIN, I.P., inzh.; ZUBAREV,
    S.N., inzh.; TIKHOVIDOV, A.F., inzh.; SHITOV, I.S., inzh.;
    GAMAYUROV, A.I., inzh.; KUSEMBAYEV, Kh.N., inzh.; DEKHTYAREV,
    S.I., inzh.; VORONOV, I.S., inzh.; BURMIN, G.M., inzh.; BARYSHEV,
    V.M., inzh.; GOLOVIN, Yu.P., inzh.; MARCHENKO, K.F., inzh.;
    RYCHKOV, L.F., inzh.; NESTERENKO, A.M., inzh.; KABANOV, V.F.,
    inzh.; PATRIKEYEV, N.N., inzh.[deceased]; ROSSMIT, A.F., inzh.;
    SOSEDOV, O.O., inzh.; POKROVSKIY, M.A., inzh., retsenzent:
    POLOTSK, S.M., red.; GOL'DIN, Ya.A., glav. red.; GOLUBYATNIKOVA,G.S.,
    red. izd-va; BOLDYREVA, Z.A., tekhn. red.

[Iron mining and ore dressing industry]Zhelezorudnaia pro-
myshlennost'. Moskva, Gosgortekhizdat, 1962.  439 p.
                                        (MIRA 15:12)

1. Moscow. TSentral'nyy institut informatsii chernoy metallurgii.
    (Iron mines and mining)   (Ore dressing)

SHIFRIN, I.I.; RIMSHA, G.B.

The riches of the Kursk Magnetic Anomaly at the service of
our country. Gor.zhur. no. 1:23-25 Ja '64.        (MIRA 17:3)

1. Direktor instituta TSentrogiproruda (for Shifrin). 2. Glavnyy
inzh. instituta TSentrogiproruda (for Rimsha).

VASHCHENKO, Yu.I.; SHIFRIN, I.Z.

Improving the axial adjustment of three-high plug rolling mills.
Metallurg 10 no.9:30-32  S '65.                    (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy trubnyy institut i zavod
im. K.Libknekhta.

PROCESSES AND PROPERTIES INDEX

3

**Influence of the excited states of atoms of the admixture on the electric properties of semiconductors.** K. S. Shifrin. *J. Tech. Phys.* (U.S.S.R.) 14, 43-8(1944).— Theoretical-math. Analysis of the energy states of semiconductors with high elec. cond., due to admixt. of metals to the semiconductor (semimetals), shows that the quantum no. of the highest excited state of the admixed atoms, and thus the ionization energy, decrease with higher concn. of the admixt. At high temp. many electrons remain in the high excited states and do not contribute to cond. The observed nonlinearity of the temp. dependence of cond. of semimetals is attributed to the influence of the excited states.          S. Pakswer

**Theory of electrical properties of "semimetals."** K. S. Shifrin. *J. Tech. Phys.* (U.S.S.R.) 14, 49-60(1944). S. exams. the electron mean free path, the elec. cond., the thermoelec. effect and the Hall effect in "semimetals" (substances intermediate in properties between metals and ordinary semiconductors) having at. or ionic lattices. The elec. cond. of "semimetals" drops with increasing temp. The drop for atomic lattices is proportional to $1/T$ at low, to $1/T^{1/2}$ at high temp. For ionic lattices the drop is proportional to $1/T^{1/2}$ at high, to $e^{-a/kT}$ at low temp. The thermoelec. force increases in "semimetals" with temp. The Hall coeff. in "semimetals" is intermediate between that for metals and that for semiconductors, the total variation being 30%.          S. Pakswer

ASM-SLA   METALLURGICAL LITERATURE CLASSIFICATION

SHifRiN, K.S.

7.4-286

551.593.5

Shifrin, K. S. K teorii rasseianiia sveta na primesiakh v atmosfere i gidrosfere. [Theory of light diffusion in admixtures in the atmosphere and hydrosphere.] *Akademiia Nauk SSSR, Doklady,* 59(3):483-486, Jan. 21, 1948. table, ref., 6 eqs. DLC—A formula for the intensity of scattered light when the field inside the particle scattering the light coincides with the external field has been developed by Y. ROCARD, but the effect of polarization of the substance inside the particles was disregarded and the formula was therefore found unsatisfactory. In this paper the author solves the same question proceeding from Maxwell's equations, which with the aid of Hertz vector, are modified into an integral equation determining the spatial part of an effective electric field, both inside and outside of the sphere. The integral equation is solved by successive approximations, i.e. expansions in terms of $\alpha$, a parameter depending on the electric polarization. The method can be also applied to particles of smoke in which the coefficient of refraction is not too large, as the electric conductivity of smoke particles is usually small. *Subject Headings:* 1. Light diffusion 2. Scattering of light.—*A. M. P.*

SHIFRIN, K. S.

"An Error in Calculation from Mie's Formulas," Iz Ak Nauk SSSR, Ser Geograf i Geofiz, Vol. 13, No2, pp 165-168, 1949.

SHIFRIN, K. S., GORDON, I. Z. and FAYNSHTEYN, M. G.

"The Coefficient of Convective Diffusion within a Closed Vessel", Iz Ak Nauk SSSR, Ser Geograf i Geofiz, Vol. 13, No. 3, pp 238-242, 1949.

SHIFRIN, K. S

USSR/Physics - Optics, Geometrical    Mar/Apr 50
    Light, Scattering

PA  156T89

"Scattering of Light by Large Water Drops and Polar-
ization of Light in Rainbows," K. S. Shifrin, Main
Geophys Obs, Leningrad, 35 pp

"Iz Ak Nauk SSSR, Ser Geograf i Geofiz" Vol XIV,
No 2

Discusses scattering of light by large transparent
sphere based on elementary laws of geometrical op-
tics, taking into account all pencils of light up
to light undergoing eight internal reflections.

USSR/Physics - Optics, Geometrical    Mar/Apr 50
    (Contd)

156T89

Gives similar calculations for case of a water drop.
Considers polarization of scattered light along with
intensity. Formulas of geometrical optics reduce to
infinite intensities in the directions of rainbows.
Polarization of light in rainbows, at the same time,
is quite definite. Submitted by Acad V. V. Shuley-
kin 20 Jul 49.

156T89

ANS/A + B

JUL 1951

551.521:551.593.5

2.7-93
Shifrin, K. S. K teorii rasseianiia sveta v atmosfere. [Theory of diffusion of light in the atmosphere.] Leningrad, Glavnaia Geofizicheskaia Observatoriia, Trudy, 19(81):255-287, 1950. 11 figs., 5 tables, 15 refs., 101 equations. DLC—The basic integral equations are solved and elaborate tables developed for computing the amount of scattering in the atmosphere under varying conditions. The first approximate theory of the author is compared with the diffraction theory of Kirchhoff, and it is concluded that the coefficient of diffusion is (?) near $2\pi\rho^2$. The second approximation for a sphere of ice or water of the dimension of the wave length of the light is then treated in detail, and then a comparison is made with calculations of other authors [Mie (1908), Rocard (1930)] and, finally, the diffusion from non-spherical particles (elongated, dipolar and disc-shaped) worked out in some detail. It is shown that the same laws applicable to electric phenomena can be used for light and vice versa. *Subject Heading:* Scattering. *M. R.*

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

2

c A

The coherent scattering of light in transparent disperse systems   K. S. Shifrin, Kolloid. Zhur. 13, 130-33 (1951). Because of the interference of light scattered by neighboring particles, the usual equation $I = NI_0$ is incorrect; $I$ is the light intensity in a point outside the system, $N$ the no. of particles in the system, and $I_0$ the light intensity originating from one particle. The correct equation is derived. If the vol. ratio of particles to total vol. is small, $I = NI_0(1 + Nf)$, $f$ being a function of $4\pi R \sin \phi / \lambda$; $R$ is particle radius, $\lambda$ is wave length, and $2\phi$ is the angle between incident and observed beams. If $l$ is the av. distance between 2 nearest particles, $I$ is approx. $NI_0$ when $\lambda/l < 1$ and approx. $N^2 I_0 f$ when $\lambda/l \gg 1$. A typical curve of $I$ as function of $R \sin \phi / \lambda$ is shown.          J. J. R.

SHIFRIN, K.S.

RT-685 /Thermal emission by small particles/ Teplovoe izluchenie malykh chastits.
Doklady Akademii Nauk SSSR, 77(3): 399-402, 1951.

SHIFRIN, K. S.


Scattering of Light in a Turbid Medium.  Glavpoligrafizdat, Main Polygraphic Publishing House, 288 pp, 1952.

SHIFRIN, K. S.

USSR/Geophysics - Scattering of Light   Mar/Apr 52

"Scattering of Light on Double-Layer Particles,"
K.S. Shifrin, Main Geophys Obs imeni Voyeykov

"Iz Ak Nauk SSSR, Ser Geofiz"  No 2, pp 15-21

Analyzes diffraction of plane electromagnetic
wave by a double-layer sphere.  Derives detailed
formulas concerning small particles.  Phenomenon
of peculiar "skin-effect" during scattering by
homogeneous sphere is noticeable.  Describes con-
ditions at which "double-layer" may be neglected.
Analyzes case of small spherical envelope.  Re-
ceived 25 Dec 51.

216T75

SHIFRIN, K. S.

Light

"Light diffusion in a cloudy medium."  Reviewed by G. V. Rosenberg. Usp.fiz. nauk 46 no. 2, 1952.

9.  MONTHLY LIST OF RUSSIAN ACCESSIONS, Library of Congress, August 1952. Uncl.

SHIFRIN, K.S.

POLYAKOVA, Ye.A.; SHIFRIN, K.S.

Microstructure and transparency of rain. Trudy GGO no.42:84-96
'53.                                                    (MIRA 11:1)
            (Rain and rainfall)  (Atmospheric transparency)

*SHIFRIN. K.S.*

USSR/Geophysics - Light scattering

Card 1/1

FD 397

Author      :  Shifrin, K. S.

Title       :  Amplitudes of the partial waves when light is scattered by cloud rain-
               drops

Periodical  :  Izv.  AN SSSR, Ser. geofiz. 4, 375-377, Jul/Aug 1954

Abstract    :  Presents results of calculations in accordance with the exact diffrac-
               tion formulas for the amplitudes of the partial waves when light is
               scattered by cloud raindrops (index of refraction = 1.3300)

Institution :  Main Geophysics Observatory imeni A. I. Voyeykov

Submitted   :  October 23, 1953

SHIFRIN, K.S.

Theory of the radiation properties of clouds. Dokl.AN SSSR 94
no.4:673-676 F '54.                                    (MLRA 7:2)

1. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova.
Leningrad.                      (Clouds)  (Radiation)

SHIFRIN K.S.

NIKANDROV, V.Ya., kand.fiz.-mat.nauk, red.; SHISHKIN, N.S., doktor fiz.-mat.
        nauk, red.; SHIFRIN, K.S., doktor fiz.-mat.nauk, red.; SOLOV'YEV,
        V.A., kand.fiz.-mat.nauk, red.; PISAREVSKAYA, V.I., red.;
        SOLOVEYCHIK, A.A., tekhn.red.

[Investigations of clouds, precipitation, and thudnerstorm
electricity] Issledovanie oblakov, osadkov i grozovogo elektri-
chestva; sbornik dokladov V Mezhvedomstvennoi konferentsii po
voprosam issledovaniia oblakov, osadkov i grozovogo elektrichestva.
Leningrad, Gidrometeor. izd-vo, 1957. 214 p.          (MIRA 11:6)

1. Russia (1923-   U.S.S.R.) Glavnoye upravleniye gidro-
meteorologicheskoy sluzhby.
        (Clouds)   (Atmospheric electricity)
        (Precipitation (Meteorology))

49-6-18/21

AUTHORS: Shifrin, K. S. and Guseva, L. N.

TITLE: Forecasting of the natural illumination intensity.
(Prognoz yestestvennoy osveshchennosti)

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya"
(Bulletin of the Ac.Sc., Geophysics Series), 1957, No.6,
pp. 827-830 (U.S.S.R.)

ABSTRACT: It is now known that the regime of the natural illumination
intensity is independent of the geographical latitude of the
observation point. According to data published by
Sharonov, V.V. (1) and particularly data published by
Barteneva, O.D. and Guseva, L.N. (2), the natural intensity
of illumination in a given point is an unequivocal
function of the height of the Sun and the degree of cloudi-
ness, i.e. it depends only on the character and intensity
of the flux irradiating the lower layers of the atmosphere.
The changes in natural illumination intensity caused by
fluctuations by the transparency of the atmosphere are
smaller than the accuracy of observations of the illumination
intensity. Therefore, it is possible to forecast the
illumination intensity by utilising the existing scheme
of forecasting cloudiness. The aim of this paper is to
develop a method of forecasting of the local illumination

Card 1/3

_____ horizon. The _____ height of
_____umination will be 3000 Lux for a respective
_____nor also mentions the work of _____ and

49-6-18/21

Forecasting of the natural illumination intensity. (Cont.)

Wörner, H. (4) and states that Wörner tries to circumvent the necessity of forecasting cloudiness and considers that that is not justified and that to be effective the method of Wörner requires accumulation of illumination intensity data over many years for all the points of interest. There are 3 tables and 4 references, 3 of which are Slavic.

SUBMITTED: November 19, 1956.

ASSOCIATION: Chief Geophysics Observatory imeni A.I. Voyeykov.
(Glavnaya Geofizicheskaya Observatoriya im. A.I.Voyeykova).

AVAILABLE: Library of Congress
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SHIFKIN, K.S.

AUTHOR:   Shifrin, K.S. and Rabinovich, Yu.I.           49-12-7/16

TITLE:    Spectral Indicatrices of Large Water Drops and Spectral
          Polarisation of Rainbows (Spektral'nye indikatrisy krupnykh
          kapel' vody i spektral'naya polyarizatsiya radug)

PERIODICAL:  Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya,
                 1957, no.12, pp. 1491 - 1506 (USSR).

ABSTRACT:    Applying formulae of geometrical optics and taking into
          consideration the $m(\lambda)$ characteristics for liquid water
          (m - refractive coefficient), the spectral indicatrices of
          scattering of light on large water drops are calculated for that
          part of the spectrum where the absorption by water can be dis-
          regarded (near ultra-violet, visible and near infra-red ranges).
          The polarisation of coloured arcs in rainbows is calculated.
          The tables of the indicatrices $\tau_{s,p}^{(k)}$ for various values of  n
          are calculated in the same way as in an earlier paper of
          one of the authors [Ref.2];  for each value of n five orders of
          scattering are calculated and, thereby, about 99.8% of the
          light scattered by a drop is taken into consideration.  Indica-
          trices were calculated for scattering angles $\beta$ = 0.1, 2 and 5
          and for steps of $5°$ each up to $180°$, separately for the  s  and
          p  components.  The results of the calculations are entered
Card1/3  in Table 6, pp. 1494 - 1502.  The calculations carried out in

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Spectral Indicatrices of Large Water Drops and Spectral Polarisation
of Rainbows.

the paper enable evaluating the accuracy with which the depen-
dence of  n  on  λ  can be disregarded inside a given spectral
range, i.e. to what extent the drop can be considered as
being "grey". Usually, this is done for the entire visible
range and, generally, for the entire here considered spectral
range. For water drops, the magnitude of  n  can be assumed
constant and equalling 1.3300 for the entire range.  In cal-
culating the intensity according to the formulae of geometrical
optics, the model of the "grey" drop results in an error which,
for most angles, does not exceed ± 10% and, therefore, taking
into consideration change of  n  as a function of  λ , calculated
according to accurate diffraction formulae, the error will be
of about the same magnitude. This is important since all the
tabulation of accurate formulae for scattering on a drop is
made for  n = 1.3300  and is usually applied for calculations
within a wide range of the spectrum in which  n  cannot be
considered constant.  The here described calculations can also
be applied for any large spherical particles for which the
relative refraction coefficient is within the range 1.3200 to
Card2/3  1.3450.  There are 4 figures, 7 tables and 2 Slavic references.

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Spectral Indicatrices of Large Water Drops and Spectral Polarisation of Rainbows.

ASSOCIATION:   Main Geophysical Observatory im. A.I. Voyeykov
(Glavnaya Geofizicheskaya Observatoriya
im. A.I. Voyeykova)

SUBMITTED:   November 28, 1956.

AVAILABLE:   Library of Congress.

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SHIIKIN, K.S.

36-68-1/18

AUTHOR: Shifrin, K.S. and Minin, I.N.

TITLE: Contributions to the Theory of Non-horizontal Visibility
(K teorii negorizontal'noy vidimosti)

PERIODICAL: Trudy Glavnoy geofizicheskoy observatorii
1957, Nr 68, pp. 5-75 (USSR)

ABSTRACT: The authors consider all the available theories of
visibility in non-horizontal or inclined direction unsatis-
factory (i.e. visibility of various objects from an air-
plane) since they neither account for all optical
characteristics of the atmosphere nor offer any readily
applicable calculation method. The authors assume the
aerosol structure of cloudless atmosphere, the spectral
transparency of atmospheric aerosol, and the indicators
(coefficients) of dispersion in the atmosphere as starting
points for the development of their theory of non-
horizontal visibility. Variable optical thicknesses of
atmospheric layers modify the amount and intensity of
light reflected by ground objects and influence the
visibility of these objects from the sky.

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Contributions to the Theory of Non-horizontal Visibility (c ...

Mathematical formulas for calculating the intensity of light
(specified as brightness of haze) scattered by the lower atmo-
spheric layer are given.  Tables in the appendix supply the
values of spectral illumination of the surface, brightness of the
haze and other pertinent parameters.  The distributive factor in
dispersion, called here the indicatrix, is mathematically estab-
lished.  The article mentions V.A. Faas, V.G. Kastrov, Ye.L.
Krinov, A.N. Gordov, Ye.S. Kuznetsov, V.V. Sobolev, S.D.
Gutshabash, K.S. Shifrin, and Sh. Fabri.  There are 7 drawings,
18 tables (in the text) and a 40-page appendix, consisting of
6 tables; of 16 references, 11 are USSR.

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36-68-9/18

AUTHOR:     Shifrin, K.S., and Pyatovskaya, N.P.

TITLE:      Indices of Brightness of Natural Surfaces (Ob indikatrisakh yarkosti yestestvennykh poverkhnostey)

PERIODICAL: Trudy Glavnoy geofizicheskoy observatorii
                    1957, Nr 68, pp. 140-151 (USSR)

ABSTRACT:   The article describes a new method of measuring the
            degree of brightness of a snow-covered surface from the
            air, by using three pyranometers properly mounted on a
            PO-2 airplane.  The pyranometer also measures the albedoes
            of such surfaces.  The theory of this method, based on
            uniformity of surface conditions, is explained mathe-
            matically.  The article mentions Ye. L. Krinov.  There are
            7 figures, 3 tables, and 6 references, of which 5 are
            USSR.

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SHIFRIN, K. S., and BAZIIEVICH, V. V. (editors)

"The Works of Ya. I. Frenkel' on Geophysics,"

in Collection of Selected Works of Ya. I. Frenkel', Vol. 2, Scientific Articles,
Moscow, Izd-vo AN SSSR, 1958, 600pp

SHIFRIN, K.S.                                  49-58-2-17/18

AUTHOR:    Shifrin, K. S.

TITLE:     A Universal Formula for Rate of Descent of a Sphere
           in Fluid.  (Universal'naya formula dlya skorosti
           padeniya shara v zhidkosti.)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya,
           1958, Nr.2, pp.280-282.  (USSR)

ABSTRACT: 1.  The formula[*]

$$v = 10^6 \left( \frac{0.787}{a^2} + \frac{503}{\sqrt{a}} \right)^{-1} \text{cm/sec.} \qquad (\text{Eq.1})$$

is proposed in Ref.1 as a determination of the rate of
descent  v  of a raindrop of radius  a.

---

[*]In Ref.1 it is erroneously stated that formula 1 was
   deduced by L. Krystanov.  In fact, this is a well-
   known empirical formula due to Schmidt, about which
Card 1/9  Krystanov himself writes (Ref.2).

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A Universal Formula for Rate of Descent of a Sphere in Fluid.

Formula 1 has a number of limitations.  The principal one is that the formula takes no account of the physical properties of the air in which the drop is falling, and from the formula it is impossible to determine the variation of $v$ with the temperature of the air, with the height above sea level, and with humidity; and what the rate of descent would be for other spheres in the atmosphere and in general in any fluid.

A general method of calculating the rate of descent of an arbitrary solid sphere in a fluid has been described in Ref.3;  it is also described in Ref.4.  Basically this method uses the universal dependence of the drag coefficient $C_D$ on the Reynolds number $Re$, which has been obtained from experiments in wind tunnels:

$$C_D = f(Re). \qquad \text{(Eq.2)}$$

Card 2/9   We note that $C_D$ is defined by the formula

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A Universal Formula for Rate of Descent of a Sphere in Fluid.

$$f_{res} = C_D \pi a^2 \frac{\rho v^2}{2} \, ,$$

where $f_{res}$ is the drag force and $\rho$ the density of the surrounding air.

It is not difficult to show that in an established regime of descent the following relation applies (cf. for example formula 5.19[*] in Ref.3):

$$a a^3 = \frac{1}{24} Re^2 f(Re), \qquad\qquad (Eq.3)$$

$$a = \frac{4}{9} \frac{\rho \sigma g}{\mu^2} \, . \qquad\qquad (Eq.4)$$

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[*]In 5.19 of Ref.3 there is a misprint: under the cube-root sign $\mu$ should be replaced by $\mu^2$.

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A Universal Formula for Rate of Descent of a Sphere in Fluid.

Here $\mu$ is the viscosity of the fluid; $\sigma$ the density of the sphere; $g$ the acceleration due to gravity.

In calculating the rate of descent for given values of the parameters $\rho$, $\sigma$, $g$ and $\mu$, we first of all calculate $a$, and then with the aid of the function $f(Re)$ we determine $Re$ from Eq.3. Knowing $Re$ we can find $v$.

This general method of calculation is rather cumbersome. It can be considerably simplified if it is noticed that the most laborious part of these calculations, by virtue of the universality of the function $f(Re)$, can be carried out in general in advance. Then we obtain a universal formula for the rate of descent of a solid sphere of arbitrary dimensions in any fluid in which the physical properties of the fluid and the sphere appear explicitly. This is the object of the present note.

2. Denote the right-hand side of Eq.3 by $F(Re)$:

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$$F(Re) = \frac{1}{24} Re^2 f(Re).$$ (Eq.5)

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A Universal Formula for Rate of Descent of a Sphere in Fluid.

Determination of Re from Eq.5 leads on each occasion to the solution of the transcendental equation

$$F(x) - \alpha a^3 = 0.$$

In order to determine the solution in general the inverse function $\Phi(x) = F^{-1}(x)$ is introduced. Using $\Phi(x)$ we obtain from Eq.5

$$Re = \Phi(\alpha a^3)$$

or

$$v = \frac{\mu}{2\rho a} \Phi(\alpha a^3).$$ (Eq.6)

The formula 6 is the required universal formula. It is necessary to know the function $\Phi(x)$ for practical applications. We return now to its evaluation.

For small x the series obtained by Goldstein for the function $f(Re)$ can be used to determine $\Phi(x)$:

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